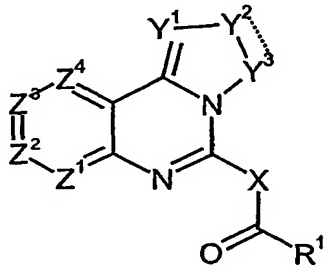
CLAIMS

(1) A fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof:



wherein

X represents CR^5R^6 or NH;

Y^1 represents CR^3 or N;

Chemical bond between Y^2═Y^3 represents a single bond or double bond,
with the proviso that when theY^2═Y^3 represents a double bond,
Y^2 and Y^3 independently represent CR^4 or N, and
when Y^2═Y^3 represents a single bond, Y^2 and Y^3 independently represent CR^3R^4 or NR^4;

Z^1, Z^2, Z^3 and Z^4 independently represent CH , CR^2 or N;

R^1 represents aryl optionally having 1 to 3 substituents selected from R^{11},
C_{3-8} cycloalkyl optionally having 1 to 3 substituents selected from R^{11},
C_{1-6} alkyl optionally substituted by aryl, heteroaryl, C_{1-6} alkoxyaryl, aryloxy, heteroaryloxy or one or more halogen,
C_{1-6} alkoxy optionally substituted by carboxy, aryl, heteroaryl, C_{1-6} alkoxyaryl, aryloxy, heteroaryloxy or one or more halogen,
or

a 3 to 15 membered mono- or bi-cyclic heterocyclic ring that is saturated or unsaturated, optionally having 1 to 3 substituents selected from R^{11}, and contains 1 to 3 heteroatoms selected from the group consisting of N, O and S,

wherein

R^{11} represents halogen, nitro, hydroxy, cyano, carboxy, amino, N-(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(formyl)-N-(C_{1-6}alkyl)amino, N-(C_{1-6}alkanesulfonyl) amino, N-(carboxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, N-(C_{1-6}alkoxycabonyl)amino, N-[N,N-di(C_{1-6}alkyl)amino methylene]amino, N-[N,N-di(C_{1-6}alkyl)amino (C_{1-6}alkyl)methylene]amino, N-[N,N-di(C_{1-6}alkyl)amino C_{2-6}alkenyl]amino, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, N,N-di(C_{1-6}alkyl)aminocarbonyl, C_{3-8}cycloalkyl, C_{1-6} alkylthio, C_{1-6}alkanesulfonyl, sulfamoyl, C_{1-6}alkoxycarbonyl,

N-arylamino wherein said aryl moiety is optionally having 1 to 3 substituents selected from R^{101}, N-(aryl C_{1-6}alkyl)amino wherein said aryl moiety is optionally having 1 to 3 substituents selected from R^{101}, aryl C_{1-6}alkoxycarbonyl wherein said aryl moiety is optionally having 1 to 3 substituents selected from R^{101},

C_{1-6}alkyl optionally substituted by mono-, di- or tri- halogen, amino, N-(C_{1-6}alkyl)amino or N,N-di(C_{1-6}alkyl)amino,

C_{1-6}alkoxy optionally substituted by mono-, di- or tri- halogen, N-(C_{1-6}alkyl)sulfonamide, or N-(aryl)sulfonamide,

or

a 5 to 7 membered saturated or unsaturated ring having 1 to 3 heteroatoms selected from the group consisting of O, S and N, and optionally having 1 to 3 substituents selected from R^{101}

wherein

R^{101} represents halogen, carboxy, amino, N-(C_{1-6} alkyl)amino, N,N-di(C_{1-6}alkyl)amino, aminocarbonyl, N-(C_{1-6}alkyl)amino-carbonyl, N,N-di(C_{1-6}alkyl)aminocarbonyl, pyridyl,

C_{1-6} alkyl optionally substituted by cyano or mono- di- or tri-halogen,

and

C_{1-6}alkoxy optionally substituted by cyano, carboxy, amino, N-(C_{1-6} alkyl)amino, N,N-di(C_{1-6}alkyl)amino, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, N,N-di(C_{1-6}alkyl)aminocarbonyl or mono-, di- or tri- halogen;

R^2 represents hydroxy, halogen, nitro, cyano, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, C_{1-6} acyloxy, aminoC_{1-6} acyloxy, C_{2-6}alkenyl, aryl,

a 5-7 membered saturated or unsaturated heterocyclic ring having 1 to 3 heteroatoms selected from the group consisting O, S and N, and optionally substituted by

hydroxy, C_{1-6} alkyl, C_{1-6} alkoxy, oxo, amino, amino C_{1-6}alkyl, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6} acyl)amino, N-(C_{1-6}alkyl)carbonylamino, phenyl, phenyl C_{1-6} alkyl, carboxy, C_{1-6}alkoxycarbonyl, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, or N,N-di(C_{1-6}alkyl)amino, -C(O)- R^{20}

wherein

R^{20} represents C_{1-6} alkyl, C_{1-6} alkoxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6} acyl)amino, or a 5-7

membered saturated or unsaturated heterocyclic ring having 1 to 3 heteroatoms selected from the group consisting O, S and N, and optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy, oxo, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6} acyl)amino, phenyl, or benzyl,

C_{1-6} alkyl optionally substituted by R^{21},
or
C_{1-6} alkoxy optionally substituted by R^{21},
wherein

R^{21} represents cyano, mono-, di or tri- halogen, hydroxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6} alkyl) amino, N- (halophenylC_{1-6} alkyl) amino, amino C_{2-6} alkylenyl, C_{1-6} alkoxy, hydroxyC_{1-6} alkoxy, -C(O)- R^{201}, -NHC(O)- R^{201}, C_{3-8}cycloalkyl, isoindolino, phthalimidyl, 2-oxo-1,3-oxazolidinyl, aryl or a 5 or 6 membered saturated or unsaturated heterocyclic ring having 1 to 4 heteroatoms selected from the group consisting O, S and N , and optionally substituted by hydroxy, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxycarbonyl, hydroxyC_{1-6} alkoxy, oxo, amino, aminoC_{1-6}alkyl, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6} acyl)amino, or benzyl,

wherein

R^{201} represents hydroxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N- (halophenylC_{1-6} alkyl) amino, C_{1-6}alkyl, aminoC_{1-6} alkyl, aminoC_{2-6} alkylenyl, C_{1-6} alkoxy, a 5 or 6

membered saturated or unsaturated heterocyclic ring having 1 to 4 heteroatoms selected from the group consisting O, S and N, and optionally substituted by hydroxy, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxycarbonyl, hydroxyC_{1-6} alkoxy, oxo, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6} acyl)amino or benzyl;

R^3 represents hydrogen, halogen, aminocarbonyl, or C_{1-6} alkyl optionally substituted by aryl C_{1-6} alkoxy or mono-, di- or tri- halogen;

R^4 represents hydrogen or C_{1-6} alkyl;

R^5 represents hydrogen or C_{1-6} alkyl; and

R^6 represents halogen, hydrogen or C_{1-6} alkyl.

(2) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

wherein

X represents CR^5R^6 or NH;

Y^1 represents CR^3 or N;

Chemical bond between Y^2═Y^3 represents a single bond or double bond,
with the proviso that when theY^2═Y^3 represents a double bond,
Y^2 and Y^3 independently represent CR^4 or N, and
when Y^2═Y^3 represents a single bond, Y^2 and Y^3 independently represent CR^3R^4 or NR^4;

Z^1, Z^2, Z^3 and Z^4 independently represent CH, CR^2 or N;

R^1 represents

C_{1-6} alkyl optionally substituted by mono-, di- or tri- halogen, phenyl, methoxyphenyl, phenoxy, or thienyl,

C_{1-6} alkoxy optionally substituted by mono-, di- or tri- halogen, phenyl, methoxyphenyl, phenoxy, or thienyl,

or

one of the following carbocyclic and heterocyclic rings selected from the group consisting of cyclopropyl, cyclohexyl, piperidinyl, piperazinyl, pyrrolyl, pyrazolyl, furyl, thienyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, imidazolyl, isoimidazolyl, pyrazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-triazole, 1,2,4-triazole, 1,2,5-triazole, 1,3,4-triazole, phenyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, 1-benzothiophenyl, benzothiazolyl, benzimidazolyl, 3H-imidazo[4,5-b]pyridinyl, benzotriazolyl, indolyl, indazolyl, imidazo[1,2-a]pyridinyl, quinolinyl, and 1,8- naphthyridinyl,

wherein

said carbocyclic and heterocyclic rings optionally substituted with 1 to 3 substituents selected from the group consisting of hydroxy, halogen, nitro, cyano, carboxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkoxycarbonyl)amino, N-(formyl)-N-(C_{1-6}alkyl)amino, N[N,N-di(C_{1-6}alkyl)amino methylene]amino, N[N,N-di(C_{1-6}alkyl)amino (C_{1-6}alkylene)methyl-

ene]amino, N-[N,N-di(C_{1-6}alkyl)amino C_{2-6}alkenyl]amino, C_{1-6} alkylthio, C_{1-6}alkanesulfonyl, sulfamoyl, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, pyrrolyl, imidazolyl, pyrazolyl, pyrrolidinyl, pyridyl, phenyl C_{1-6}alkoxycarbonyl,

thiazolyl optionally substituted by pyridyl,
piperazinyl optionally substituted by C_{1-6} alkyl or C_{1-6}alkoxy
and
C_{1-6}alkyl optionally substituted by mono-, di- or tri- halogen;

R^2 represents hydroxy, halogen, nitro, cyano, carboxy, amino, N-(C_{1-6}-alkyl)amino, N-(hydroxy C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxy C_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, C_{2-6}alkenyl, C_{1-6}alkoxycarbonyl, aminocaronyl, C_{1-6}acyloxy, aminoC_{1-6} acyloxy, furyl, morpholino, phenyl, piperidino, aryl,

pyrrolidinyl optionally substituted by C_{1-6}acylamino,
piperidino optionally substituted by hydroxy, C_{1-6} alkyl, carboxy, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, or N,N-di(C_{1-6}alkyl)aminocarbonyl,

piperazinyl optionally substituted by
C_{1-6} alkyl,
C_{1-6} alkyl optionally substituted by cyano, mono-, di- or tri- halogen, hydroxy, amino, N-(C_{1-6}alkyl)amino, N-(hydroxy C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, C_{3-6} cycloalkyl, tetrazolyl, tetrahydropyranyl, morpholino, phthalimidyl, 2-oxo-1,3oxazolidinyl, phenyl, -C(O)- R^{201}, pyrrolidinyl optionally substituted by C_{1-6}acylamino,

piperidino optionally substituted by hydroxy, C_{1-6} alkyl, carboxy, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, or N,N-di(C_{1-6}alkyl)aminocarbonyl, or piperazinyl optionally substituted by C_{1-6} alkyl,

wherein

R^{201} represents hydroxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(halobenzyl)amino, C_{1-6}alkyl, C_{1-6} alkoxy, tetrazolyl, tetrahydropyranyl, morpholino,

pyrrolidinyl optionally substituted by C_{1-6}acylamino, piperidino optionally substituted by

hydroxy, C_{1-6} alkyl, carboxy, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, or N,N-di(C_{1-6}alkyl)aminocarbonyl,

or

piperazinyl optionally substituted by C_{1-6} alkyl, C_{1-6} alkoxy optionally substituted by cyano, mono-, di- or tri- halogen, hydroxy, C_{1-6}alkoxy, hydroxy C_{1-6} alkoxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, pyrrolyl, tetrazolyl, tetrahydropyranyl, morpholino, phthalimidyl, 2-oxo-1,3oxazolidinyl, phenyl, -C(O)- R^{201},

pyrrolidinyl optionally substituted by C_{1-6}acylamino, piperidino optionally substituted by hydroxy, C_{1-6} alkyl, carboxy, aminocarbonyl, N-(C1-6-alkyl)aminocarbonyl, or N,N-di(C1-6alkyl)aminocarbonyl,

or

piperazinyl optionally substituted by C_{1-6} alkyl,

wherein

R^{201} represents hydroxy, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(halobenzyl)amino, C_{1-6} alkyl, C_{1-6} alkoxy, amino C_{2-6} alkylenyl, tetrazolyl, tetrahydropyranyl, morpholino, pyrrolidinyl optionally substituted by C_{1-6}acylamino, piperidino optionally substituted by hydroxy, C_{1-6} alkyl, carboxy, aminocarbonyl, N-(C_{1-6}alkyl)aminocarbonyl, or N,N-di(C_{1-6}alkyl)aminocarbonyl,

or

piperazinyl optionally substituted by C_{1-6}alkyl;

R^3 represents hydrogen, halogen, C_{1-6} alkyl optionally substituted by aminocarbonyl, arylC_{1-6} alkoxy, or mono-, di- or tri-halogen;

R^4 represents hydrogen or C_{1-6} alkyl;

R^5 represents hydrogen or C_{1-6} alkyl; and

R^6 represents hydrogen, halogen or C_{1-6} alkyl.

(3) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1, wherein

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between Y^2═Y^3 represents a single bond.

Z^4 represents CH;

Z^1, Z^2 and Z^3 independently represent CH, CR^2 or N;

R^1 represents

C_{1-6} alkyl optionally substituted by mono-, di- or tri- halogen, phenyl, methoxyphenyl, phenoxy, or thienyl,

C_{1-6} alkoxy optionally substituted by phenyl phenoxy, thienyl or mono-, di- or tri- halogen,

or

one of the following carbocyclic and heterocyclic rings selected from the group consisting of cyclopropyl, cyclopentyl, cyclohexyl, piperidinyl, piperazinyl, pyrrolyl, pyrazolyl, furyl, thienyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, imidazolyl, isoimidazolyl, pyrazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl, phenyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, 1-benzothiophenyl, benzothiazolyl, benzimidazolyl, 3H-imidazo[4,5-b]pyridinyl, benzotriazolyl, indolyl, indazolyl, imidazo[1,2-a]pyridinyl, quinolinyl, and 1,8- naphthyridinyl,
wherein

said carbocyclic and heterocyclic rings optionally substituted with 1 to 3 substituents selected from the group consisting of hydroxy, halogen, nitro, cyano, carboxy, amino, N-(C_{1-6}alkyl)amino, N-(hydroxy C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkoxycarbonyl)amino, N-(formyl)-N- (C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl) amino (C_{2-6}alkenyl) amino, N-(C_{1-6}alkane)sulfonyl amino,

N[N,N-di(C_{1-6}alkyl)amino methylene]amino, C_{1-6} alkylthio, C_{1-6}alkanesulfonyl, sulfamoyl, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, pyrrolyl, imidazolyl, pyrazolyl, pyrrolidinyl, pyridyl, phenyl C_{1-6}alkoxycarbonyl,

thiazolyl optionally substituted by pyridyl, piperazinyl optionally substituted by C_{1-6} alkyl or C_{1-6}alkoxy and C_{1-6}alkyl optionally substituted by mono-, di- or tri- halogen;

R^2 represents halogen, hydroxy, nitro, cyano, amino, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, (C_{2-6})alkenyl, C_{1-6}alkoxycarbonyl, aminocarbonyl, furyl, piperidino, morpholino, phenyl, pyrrolidinyl optionally substituted by N-(C_{1-6} acyl)amino, or N-(C_{1-6}alkyl)carbonylamino, piperidino optionally substituted by hydroxy, piperazinyl optionally substituted by C_{1-6}alkyl, phenylC_{1-6}alkyl, C_{1-6}alkoxycarbonyl, or aminocarbonyl;

C_{1-6} alkyl optionally substituted by amino, cyano, C_{1-6}alkoxycarbonyl, morpholino, or mono-, di- or tri- halogen,

or

C_{1-6} alkoxy optionally substituted by hydroxy, cyano, carboxy, C_{1-6} alkoxy, C_{1-6} acyl, C_{1-6}alkoxycarbonyl, amino, N-(C_{1-6}-alkyl)amino, N-(C_{1-6}alkyl)aminocarbonyl, N,N-di(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)aminocarbonyl, aminocarbonyl, aminoC_{1-6} alkylcarbonyl, N-(halobenzyl)aminocarbonyl, hydroxy C_{1-6} alkoxy, C_{3-6} cycloalkyl, morpholino, morpholinocarbonyl, pyrrolidinyl, pyrrolyl, piperidino, phthalimidyl,

or

piperazinyl optionally substituted by benzyl;

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(4) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

wherein

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between Y^2═Y^3 represents a single bond

Z^4 represents CH;

Z^1, Z^2 and Z^3 independently represent N, CH or CR^2;

R^1 represents cyclopropyl, cyclopentyl, cyclohexyl, 2-furyl, 3-furyl, imidazolyl, pyrimidinyl, pyridazinyl, piperazinyl, 1,2,3-thiadiazolyl, 1,3-benzothiazolyl, quinolyl, 3H-imidazo[4,5-b]pyridinyl, 1H-pyrrol-2-yl optionally substituted by C_{1-6}alkyl, 1H-pyrrol-3-yl optionally substituted by C_{1-6}alkyl, pyrazolyl optionally substituted by 1 or 2 C_{1-6}alkyl,

isoxazolyl optionally substituted by 1 or 2 C_{1-6}alkyl,
2-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,
3-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,
piperidinyl optionally substituted by C_{1-6}alkoxycarbonyl, or benzyloxycarbonyl, phenyl optionally substituted by 1 to 3 substituents selected from the group consisting of fluoro, chloro, hydroxy, nitro, cyano, carboxy, C_{1-6} alkyl, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, amino, N-(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkoxycabonyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(formyl)-N-C_{1-6}alkyl amino, C_{1-6} alkylthio, C_{1-6}alkanesulfonyl, sulfamoyl, pyrrolyl, imidazolyl, pyrazolyl, and piperazinyl optionally substituted by C_{1-6}alkyl,

pyridyl optionally substituted by 1 or 2 substituents selected from the group consisting of chloro, hydroxy, carboxy, C_{1-6}alkoxy, C_{1-6}alkylthio, amino, N-(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkane)sulfonyl amino, N[N,N-di(C_{1-6}alkyl)amino methylene]amino, and C_{1-6}alkyl optionally substituted by tri halogen,

pyrazinyl optionally substituted by C_{1-6}alkyl, 1,3-thiazolyl optionally substituted by 1 or 2 substituents selected from the group consisting of C_{1-6}alkyl, pyridyl and N-(C_{1-6}alkoxycrbonyl)amino,
indolyl optionally substituted by C_{1-6}alkyl,

benzimidazolyl optionally substituted by C_{1-6}alkyl or tri-halo C_{1-6}alkyl,

1,2,3-benzotriazolyl optionally substituted by C_{1-6}alkyl,

1,8-naphthyridinyl optionally substituted by C_{1-6}alkyl optionally substituted by tri halogen,

C_{1-6} alkyl optionally substituted by tri- halogen, phenyl, phenoxy, or thienyl,

or

C_{1-6}alkoxy optionally substituted by phenyl, phenoxy, or thienyl;

R^2 represents fluoro, chloro, bromo, hydroxy, nitro, vinyl, cyano, amino, aminoacetoxy, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, 2-furyl, piperidino, morpholino, phenyl, pyrrolidinyl optionally substituted by acetamido, piperidino optionally substituted by hydroxy, piperazinyl optionally substituted by methyl, benzyl, C_{1-6}alkoxycarbonyl, or aminocarbonyl,

C_{1-6} alkyl optionally substituted by cyano, tri-fluoro, carboxy, methoxycarbonyl, aminocarbonyl, tert-butoxycarbonyl, tetrahydropyranyl, or morpholino,

C_{1-6} alkoxy optionally substituted by hydroxy, cyano, methoxy, methoxycarbonyl, tert-butoxycarbonyl, carboxy, aminoacetyl, dimethylamino, aminocarbonyl, methylaminocarbonyl, dimethylaminocarbonyl, isopropylaminocarbonyl, fluorobenzylaminocarbonyl, cyclopropyl, pyrrolidinyl, piperidino, tetrahydropyranyl, morpholino, morpholinocarbonyl, 2-oxo-1,3-oxazolidin-4-yl, phthalimid-N-yl, or hydroxy C_{1-6} alkyleneoxy,

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(5) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

wherein

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between $Y^2 \!=\!= Y^3$ represents a single bond

Z^3 and Z^4 represent CH;

Z^1 and Z^2 independently represent CH or CR^2;

R^1 represents cyclopropyl, cyclopentyl, cyclohexyl, 2-furyl, 3-furyl, imidazolyl, 1H-pyrrol-2-yl, 1H-pyrrol-3-yl, pyrimidinyl, pyridazinyl, piperazinyl, 1,2,3-thiadiazolyl, 1,3-benzothiazolyl, quinolyl, 3H-imidazo[4,5-b]pyridinyl,

pyrrolyl optionally substituted by C_{1-6}alkyl, pyrazolyl optionally substituted by 1 or 2 C_{1-6}alkyl, isoxazolyl optionally substituted by 1 or 2 C_{1-6}alkyl,
2-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,
3-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,

piperidinyl optionally substituted by C_{1-6}alkoxycarbonyl, or benzyloxycarbonyl,

phenyl optionally substituted by 1 to 3 substituents selected from the group consisting of fluoro, chloro, hydroxy, nitro, cyano, carboxy, C_{1-6} alkyl, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, amino, N-(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkoxycabonyl)amino, N,N-di(C_{1-6}alkyl)-amino, N-(formyl)-N-C_{1-6}alkyl amino, C_{1-6} alkylthio, C_{1-6}alkanesulfonyl, sulfamoyl, pyrrolyl, imidazolyl, pyrazolyl, and piperazinyl optionally substituted by C_{1-6}alkyl,

pyridyl optionally substituted by 1 or 2 substituents selected from the group consisting of chloro, hydroxy, carboxy, C_{1-6}alkoxy, C_{1-6}alkylthio, amino, N-(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkane)sulfonyl amino, N[N,N-di(C_{1-6}alkyl)amino methylene]amino, and C_{1-6}alkyl optionally substituted by tri halogen,

pyrazinyl optionally substituted by C_{1-6}alkyl, 1,3-thiazolyl optionally substituted by

1 or 2 substituents selected from the group consisting of C_{1-6}alkyl, pyridyl and N-(C_{1-6}alkoxycrbonyl)amino, indolyl optionally substituted by C_{1-6}alkyl, benzimidazolyl optionally substituted by C_{1-6}alkyl or tri-halo C_{1-6}alkyl,

1,2,3-benzotriazolyl optionally substituted by C_{1-6}alkyl, 1,8-naphthyridinyl optionally substituted by C_{1-6}alkyl optionally substituted by tri halogen,

C_{1-6} alkyl optionally substituted by tri- halogen, phenyl, phenoxy, or thienyl,

or

C_{1-6}alkoxy substituted by phenyl, phenoxy, or thienyl;

R^2 represents fluoro, chloro, bromo, hydroxy, nitro, vinyl, cyano, amino, aminoacetoxy, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, 2-furyl, piperidino, morpholino, phenyl,

pyrrolidinyl optionally substituted by acetamido,

piperidino optionally substituted by hydroxy,

piperazinyl optionally substituted by methyl, benzyl, C_{1-6}alkoxycarbonyl, or aminocarbonyl,

C_{1-6} alkyl optionally substituted by cyano tri-fluoro, carboxy, methoxycarbonyl, aminocarbonyl, tert-butoxycarbonyl, tetrahydropyranyl, or morpholino,

or

C_{1-6} alkoxy optionally substituted by hydroxy, cyano, methoxy, methoxycarbonyl, tert-butoxycarbonyl, carboxy, aminoacetyl, dimethylamino, aminocarbonyl, methylaminocarbonyl, dimethylaminocarbonyl, isopropylaminocarbonyl, fluorobenzylaminocarbonyl, cyclopropyl, pyrrolidinyl, piperidino, tetrahydropyranyl, morpholino, morpholinocarbonyl, 2-oxo-1,3-oxazolidin-4-yl, phthalimid-N-yl, or hydroxy C_{1-6} alkyleneoxy;

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(6) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between $Y^2{=}{=}Y^3$ represents a single bond

Z^1 and Z^4 represent CH;

Z^2 and Z^3 independently represent CH or CR^2;

R^1 represents cyclopropyl, cyclopentyl, cyclohexyl, 2-furyl, 3-furyl, imidazolyl, 1H-pyrrol-2-yl, 1H-pyrrol-3-yl, pyrimidinyl, piperazinyl, pyridazinyl, 1,2,3-thiadiazolyl, 1,3-benzothiazolyl, quinolyl, 3H-imidazo[4,5-b]pyridinyl,

pyrrolyl optionally substituted by C_{1-6}alkyl,

pyrazolyl optionally substituted by 1 or 2 C_{1-6}alkyl,

isoxazolyl optionally substituted by 1 or 2 C_{1-6}alkyl,

2-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,

3-thienyl optionally substituted by chloro, nitro, cyano, or C_{1-6} alkyl,

piperidinyl optionally substituted by C_{1-6}alkoxycarbonyl, or benzyl-oxycarbonyl,

phenyl optionally substituted by 1 to 3 substituents selected from the group consisting of fluoro, chloro, hydroxy, nitro, cyano, carboxy, C_{1-6} alkyl, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl, amino, N-(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkoxycabonyl)amino, N,N-di(C_{1-6}alkyl)-amino, N-(formyl)-N-C_{1-6}alkyl amino, C_{1-6} alkylthio, C_{1-6}alkane-sulfonyl, sulfamoyl, pyrrolyl, imidazolyl, pyrazolyl, and piperazinyl optionally substituted by C_{1-6}alkyl,

pyridyl optionally substituted by 1 or 2 substituents selected from the group consisting of chloro, hydroxy, carboxy, C_{1-6}alkoxy, C_{1-6}alkylthio, amino, N-(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(C_{1-6}acyl)amino, N-(C_{1-6}alkane)sulfonyl amino, N[N,N-di(C_{1-6}alkyl)amino methylene]amino, C_{1-6}-alkoxyphenylC_{1-6}alkoxy, and C_{1-6}alkyl optionally substituted by tri halogen,

pyrazinyl optionally substituted by C_{1-6}alkyl,

1,3-thiazolyl optionally substituted by 1 or 2 substituents selected from the group consisting of C_{1-6}alkyl, pyridyl and N-(C_{1-6}-alkoxycrbonyl)amino, indolyl optionally substituted by C_{1-6}alkyl,

benzimidazolyl optionally substituted by C_{1-6}alkyl or tri-halo C_{1-6}alkyl,

1,2,3-benzotriazolyl optionally substituted by C_{1-6}alkyl, 1,8-naphthyridinyl optionally substituted by C_{1-6}alkyl optionally substituted by tri halogen,

C_{1-6} alkyl optionally substituted by tri- halogen, phenyl, phenoxy, or thienyl,

or

C_{1-6}alkoxy substituted by phenyl, phenoxy, or thienyl;

R^2 represents fluoro, chloro, bromo, hydroxy, nitro, vinyl, cyano, amino, aminoacetoxy, N-(C_{1-6}alkyl)amino, N,N-di(C_{1-6}alkyl)amino, N-(hydroxyC_{1-6}alkyl)-N-(C_{1-6}alkyl)amino, 2-furyl, piperidino, morpholino, phenyl,

pyrrolidinyl optionally substituted by acetamido, piperidino optionally substituted by hydroxy, piperazinyl optionally substituted by methyl, benzyl, C_{1-6}alkoxycarbonyl, or aminocarbonyl,

C_{1-6} alkyl optionally substituted by cyano, tri-fluoro, carboxy, methoxycarbonyl, aminocarbonyl, tert-butoxycarbonyl, tetrahydropyranyl, or morpholino,

or

C_{1-6} alkoxy optionally substituted by hydroxy, cyano, methoxy, methoxycarbonyl, tert-butoxycarbonyl, carboxy, aminoacetyl, dimethylamino, aminocarbonyl, methylaminocarbonyl, di-

methylaminocarbonyl, isopropylaminocarbonyl, fluorobenzylaminocarbonyl, cyclopropyl, pyrrolidinyl, piperidino, tetrahydropyranyl, morpholino, morpholinocarbonyl, tetrazolyl, 2-oxo-1,3-oxazolidin-4yl, phthalimid-N-yl, or hydroxy C_{1-6} alkyleneoxy;

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(7) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between Y^2=Y^3 represents a single bond

Z^3 and Z^4 represent CH;

Z^1 and Z^2 independently represent CH or CR^2;

R^1 represents 3H-imidazo[4,5-b]pyridinyl, benzimidazolyl

pyridyl optionally substituted by hydroxy, amino, acetamido, methoxybenzyloxy or methylsulfonylamino,

or

1,3-thiazolyl optionally substituted by 1 or 2 methyl;

R^2 represents fluoro, chloro, bromo, morpholino, piperazinyl, methylpiperazinyl, methyl, tri-fluoro methyl, or C_{1-6} alkoxy optionally substituted by hydroxy, cyano, carboxy, dimethylaminocarbonyl, tetrahydropyranyl, morpholino, morpholinocarbonyl, tetrazolyl, or phthalimid-N-yl;

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(8) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1,

X represents CR^5R^6 or NH;

Y^1 represents N;

Y^2 and Y^3 represent CR^3R^4;

Chemical bond between $Y^2{=}{=}Y^3$ represents a single bond;

Z^1, Z^3 and Z^4 represent CH;

Z^2 represents CR^2;

R^1 represents 3H-imidazo[4,5-b]pyridinyl, benzimidazolyl pyridyl optionally substituted by hydroxy, amino, acetamido, methoxybenzyloxy or methylsulfonylamino,

or

1,3-thiazolyl optionally substituted by 1 or 2 methyl,

R^2 represents fluoro, chloro, bromo, morpholino, piperazinyl, methyl-piperazinyl, methyl, tri-fluoro methyl, C_{1-6} alkoxy optionally substituted by hydroxy, cyano, carboxy, dimethylaminocarbonyl, tetrahydropyranyl, morpholino, morpholinocarbonyl, tetrazolyl, or phthalimid-N-yl;

R^3 represents hydrogen;

R^4 represents hydrogen;

R^5 represents hydrogen; and

R^6 represents hydrogen.

(9) The fused azolepyrimidine derivative of the formula (I), its tautomeric or stereoisomeric form, or a salt thereof as claimed in claim 1, wherein said derivative is selected from the group consisting of the following compounds:

N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

2-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-pyridin-3-ylethylenol;

N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

6-(acetamido)-N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

N-{5-[2-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-hydroxyvinyl]pyridin-2-yl}acetamide;

2-({5-[2-hydroxy-2-pyridin-3-ylvinyl]-7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-8-yl}oxy)-N,N-dimethylacetamide;

2-[7-methoxy-8-(tetrahydro-2H-pyran-2-ylmethoxy)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1-pyridin-3-ylethylenol;

2-[8-(2-hydroxyethoxy)-7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1-pyridin-3-ylethylenol;

({5-[2-hydroxy-2-pyridin-3-ylvinyl]-7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-8-yl}oxy)acetic acid;

4-({5-[2-hydroxy-2-pyridin-3-ylvinyl]-7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-8-yl}oxy)butanoic acid;

({5-[2-hydroxy-2-pyridin-3-ylvinyl]-7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-8-yl}oxy)acetonitrile;

2-[7-methoxy-8-(2H-tetrazol-5-ylmethoxy)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1-pyridin-3-ylethylenol;

2-[7-methoxy-8-(4-morpholin-4-yl-4-oxobutoxy)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1-pyridin-3-ylethylenol;

5-[1-hydroxy-2-(8-morpholin-4-yl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)vinyl]pyridin-3-ol ;

N-(2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-5-hydroxynicotinamide;

6-(acetamido)-N-(7,9-dimethoxy-8-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

N-(8,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-5-hydroxynicotinamide;

5-hydroxy-N-(7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-5-[(4-methoxybenzyl)oxy]nicotinamide;

N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-5-hydroxynicotinamide;

5-hydroxy-N-[8-(trifluoromethyl)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]nicotinamide;

N-{8-[3-(1,3-dioxo-1,3-dihydro-2H-isoindol-2-yl)propoxy]-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl}nicotinamide;

N-(7-bromo-8-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

6-amino-N-(8-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

1-(1H-benzimidazol-5-yl)-2-(8,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)ethylenol;

2-(8,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-(2,4-dimethyl-1,3-thiazol-5-yl)ethylenol;

N-(9-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-(8-bromo-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

N-(8-bromo-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-(8-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-(8-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-[8-(trifluoromethyl)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1H-benzimidazole-5-carboxamide;

N-(7-fluoro-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-(7-methoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

N-(8-chloro-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

6-(acetamido)-N-(8-morpholin-4-yl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

1-(1H-benzimidazol-5-yl)-2-(8-morpholin-4-yl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)ethylenol;

N-{5-[1-hydroxy-2-(8-morpholin-4-yl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)vinyl]pyridin-2-yl}acetamide;

6-methyl-N-(8-morpholin-4-yl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)nicotinamide;

1-(1H-benzimidazol-5-yl)-2-[8-(4-methylpiperazin-1-yl)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]ethylenol;

N-(2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-3H-imidazo[4,5-b]pyridine-6-carboxamide;

N-(7,8-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-3H-imidazo[4,5-b]pyridine-6-carboxamide;

N-[7-(trifluoromethyl)-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl]-1H-benzimidazole-5-carboxamide;

N-(7,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1H-benzimidazole-5-carboxamide;

N-{5-[2-(7,9-dimethoxy-8-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-hydroxyvinyl]pyridin-2-yl}acetamide;

N-{5-[2-(7-bromo-9-methyl-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-hydroxyvinyl]pyridin-2-yl}acetamide; and

2-(8,9-dimethoxy-2,3-dihydroimidazo[1,2-c]quinazolin-5-yl)-1-pyridin-3-ylethylenol;

(10) A medicament comprising the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 as an active ingredient.

(11) The medicament as claimed in claim 10, further comprising one or more pharmaceutically acceptable excipients.

(12) The medicament as claimed in claim 10, wherein the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof is a PI3K inhibitor.

(13) The medicament as claimed in claim 10, wherein the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof is a PI3K-γ inhibitor.

(14) The medicament as claimed in claim 10 for prophylaxis and/or treatment of inflammatory or immunoregulatory disorder.

(15) The medicament as claimed in claim 14 for prophylaxis and/or treatment of asthma, rhinitis, allergic diseases, autoimmune pathologies, rheumatoid arthritis, Grave's disease, and atherosclerosis.

(16) The medicament as claimed in claim 10 for prophylaxis and/or treatment of neurodegenerative disorders, Alzheimer's disease, or focal ischemia.

(17) The medicament as claimed in claim 10 for prophylaxis and/or treatment of diabetes, cancer, myocardial contractility disorders, heart failure, ischemia, pulmonary hypertension, renal failure, or cardiac hypertrophy.

(18) Use of the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 for manufacturing a medicament for the treatment and/or prevention of an inflammatory disorder or disease.

(19) Use of the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 for manufacturing a medicament for the treatment and/or prevention of asthma, rhinitis, allergic diseases, or autoimmune pathologies.

(20) Use of the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 for manufacturing a medicament for the treatment and/or prevention of diabetes, cancer, myocardial contractility disorders, heart failure, ischemia, pulmonary hypertension, renal failure, and cardiac hypertrophy.

(21) Use of the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 for manufacturing a medicament for the treatment and/or prevention of disorder or disease associated with PI3K activity.

(22) Use of the fused azolepyrimidine derivative, its tautomeric or stereoisomeric form, or a physiologically acceptable salt thereof as claimed in claim 1 for manufacturing a medicament for the treatment and/or prevention of disorder or disease associated with PI3K-γ activity.

(23) Process for controlling an inflammatory disorder or disease in humans and animals by administration of a PI3K inhibitory effective amount of a compound according to claim1.

(24) Process for controlling an inflammatory disorder or disease in humans and animals by administration of a PI3K-γ inhibitory effective amount of a compound according to claim1.

(25) Process for controlling an asthma, rhinitis, allergic diseases, or autoimmune pathologies, in humans and animals by administration of a PI3K-γ inhibitory effective amount of a compound according to claim1.

(26) Process for controlling a diabetes, cancer, myocardial contractility disorders, heart failure, ischemia, pulmonary hypertension, renal failure, and cardiac hypertrophy, in humans and animals by administration of a PI3K-γ inhibitory effective amount of a compound according to claim1.